RCT of a care manager intervention for major depression in primary care: 2-year costs for patients with physical vs psychological complaints

Dickinson L M, Rost K, Nutting P A, Elliott C E, Keeley R D, Pincus H

Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

Health technology
The study aimed to compare the effects of depression care management techniques in primary care, in patients with physical versus patients with psychological complaints. The management techniques comprised enhanced care practices that promoted high-quality acute care versus usual care. A detailed description of the health technologies used was provided in another publication (Depression Guideline Panel 1993, see 'Other Publications of Related Interest' below for bibliographic details).

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised adult depressed patients (positively screened on a 2-stage screening questionnaire) who were starting a new treatment episode for depression (i.e., who had at least 5 major depression symptoms during the last 2 weeks, had not received any antidepressant medication and had not received any specialty care during the preceding 6 months). Illiterate patients who could not complete written screening questionnaires and those who had no telephone access were excluded from the study, as were those who had no intention to receive ongoing care in the clinic in the following year. Also excluded were those who suffered from a life-threatening physical illness or were cognitively impaired, and pregnant, breastfeeding or postpartum women. Finally, those who met study criteria for bereavement, mania or alcohol dependence were also excluded from the study.

Setting
The setting was primary care practice and the community. The economic study was carried out in the USA.

Dates to which data relate
The patients were enrolled between April 1996 and September 1997, and were followed up for 2 years between October 1996 and September 1999. The cost data were derived from official published sources published in 1999 and 2000. All costs were reported for the price year 2000.

Source of effectiveness data
The effectiveness data were derived from a single study.

Link between effectiveness and cost data
Although not explicitly reported, it appears that the costing has been carried out retrospectively on the same sample of
patients as that used in the effectiveness analysis.

**Study sample**
The sample size was not determined in the planning phase. In addition, no power calculations were conducted retrospectively. Consecutive patients who visited the primary care practice for routine visits were screened with a 2-stage screening questionnaire by administrative staff. Initially, 653 of the 11,006 people screened were found to be positive. It was reported that of these positively screened patients, 174 (26.6%) refused further evaluation, but the reasons for refusal were not reported. Only 479 (44%) of the positively screened patients met the inclusion criteria for beginning a new treatment episode for major depression. A total of 124 patients in the enhanced care group had been recently treated and were excluded from the initial sample, compared with 144 in the usual care group. Five patients in the enhanced care group and 6 patients in the usual care group were excluded because of incomplete or unavailable medical records. The study sample comprised 200 patients, 110 in the enhanced care group and 90 in the usual care group. The mean age of the 200 participating patients was 43.4 years, and 84.0% were women.

**Study design**
The analysis was based on a multi-centre randomised controlled trial (RCT). Twelve primary care practices were included in the study and were randomised to advanced or usual care. Randomisation was achieved through stratification according to depression practice modules. Details on the randomisation of the patients are given in another study (Rost et al. 2002, see ‘Other Publications of Related Interest’ below for bibliographic details). The patients were followed up at 6, 12, 18 and 24 months after the visit, through a structured telephone interview conducted directly by an interviewer blinded to the intervention. It was reported that for 3 patients the primary care practice was contacted first in order to obtain new location data. The response rate was 89% at 6 months, 82% at 12 months, 70% at 18 months and 68% at 24 months. Nineteen patients were lost to follow-up at the first interview, but the reasons for withdrawal were not provided.

**Analysis of effectiveness**
The analysis was conducted on an intention to treat basis. The primary outcome used during the acute stage (visit at the primary care practice) was the patients' response to treatment. During the follow-up period, the primary outcomes were the patients' symptoms of depression and evaluation of the depression treatment (e.g. use of antidepressant medication). In terms of demographic characteristics, the usual care patients were older than the enhanced care patients (45.4 versus 41.8 years; p=0.04). The age factor was controlled for in all models used for the data analyses (e.g. general linear mixed models, 2-part models). The patient groups were shown to be comparable in all other sociodemographic and clinical characteristics, including minority status, insurance status, dysthymia in the previous year, panic attacks in the previous year, the presence of work limitations around the house, number of bed or cutback days, and emotional role functioning evaluated using the SF-36 (36-item Short Form Health Survey).

**Effectiveness results**
The authors reported that 66% of patients complained only of physical symptoms during the index visit, while 34% complained of either psychological symptoms or mixed psychological-physical symptoms. The difference in the percentage of patients complaining of physical symptoms in the enhanced and usual care groups was not statistically significant (63% versus 70%; p=0.28).

Enhanced care was more effective in improving depression treatment (e.g. use of antidepressant medication) for patients who complained of both psychological and physical symptoms. During the first 6 months, clinical improvement was mild and was not significantly different between patients in usual care and enhanced care complaining of physical symptoms and patients in usual care complaining of psychological symptoms. However, enhanced care was more effective in controlling depression severity in patients who reported mainly psychological symptoms than in all other groups. It is noteworthy that no quantitative results were reported for the effectiveness results reported before (Rost et al. 2002).
Clinical conclusions
The authors concluded that a 2-year ongoing intervention for primary care patients who complain of psychological symptoms at the beginning of a new depression treatment episode improves clinical outcomes. However, it is not equally effective for patients who complain exclusively of physical problems at the beginning of a new depression treatment episode.

Measure of benefits used in the economic analysis
The authors did not derive a summary measure of benefit. In effect, a cost-consequences analysis was performed.

Direct costs
The health service costs included in the analysis were the intervention costs, including time costs for screening patients (salary plus fringe benefits for care managers, physicians) and for preparation and delivery of the intervention, time costs of post-session record keeping and review after the session, care manager-physician communication and administrative overheads. Outpatient treatment costs included the costs of outpatient primary care visits, specialty mental health care visits, emergency department visits and psychotropic medication. The costs and the quantities were not reported separately. Resources used, in terms of professionals’ time, were derived from care manager logs for patient screening. Further use of health care resources was based on patient-reported utilisation. All costs were derived from official published sources. Discounting was not undertaken since the costs were incurred during 2 years. All of the costs were appropriately adjusted using the Consumer Price Index and were reported for the fiscal year 2000.

Statistical analysis of costs
The costs were analysed using SAS 8.2 software (SAS Institute, Cary). Initially, the cost data were log-transformed. General linear mixed models were carried out to estimate differences in outpatient costs between enhanced care and usual care patients. The same models were used to estimate the differential intervention effect on costs according to patient style (report of physical or psychological symptoms). In addition, 2-part models were used to estimate the total costs when more than 10% of the patients faced zero costs. The probability of incurring any costs was explored using logistic regression. The total costs were estimated annually and the authors built repeated measures models. Patients who were lost to follow-up after the first 6 months or during the second year of follow-up were accounted as facing zero costs.

Indirect costs
The indirect costs were not included in the analysis.

Currency
US dollars ($).

Sensitivity analysis
A sensitivity analysis was conducted using last-value-carried-forward methods to account for missing values. Outpatient costs were estimated for 1,000 bootstrap samples in order to estimate their distribution. A sensitivity analysis was also conducted to test the robustness of the results to the re-categorisation of the 9 patients (5 in enhanced care and 4 in usual care) whose style was hard to classify.

Estimated benefits used in the economic analysis
See the 'Effectiveness Results' section.

Cost results
In the usual care group, the total outpatient cost (including intervention) was $4,000 (95% confidence interval, CI:...
for patients complaining of psychological symptoms and $1,922 (95% CI: 1,402 - 2,665) for patients complaining of physical symptoms. The corresponding costs in the enhanced care group reached $3,020 (95% CI: 2,354 - 3,864) for patients with psychological complaints and $3,300 (95% CI: 2,629 - 4,073) for patients with physical complaints.

The authors reported that the 2-year period of enhanced care decreased outpatient costs by $980 for patients with psychological complaints at the beginning of a new depression treatment episode, while it increased costs by $1,378 for patients complaining only of physical symptoms.

The bootstrapping analysis confirmed the results by demonstrating that when the cost-offset was evaluated (enhanced outpatient care plus intervention costs equal or lower than usual care) a cost-offset was observed in 929 of the 1,000 samples for patients with psychological complaints but in only 2 of the 1,000 samples for patients with physical complaints.

Synthesis of costs and benefits
The costs and benefits were not combined.

Authors' conclusions
The depression intervention is clinically effective and results in cost-savings, as far as outpatient costs are concerned, but only for depressed patients with psychological symptoms. It produces limited clinical outcomes and increases outpatient costs for patients with only physical symptoms.

CRD COMMENTARY - Selection of comparators
The selection of the comparators was explicitly justified, although the comparators were not described in full detail. A thorough description of the comparators used is given elsewhere (Depression Guideline Panel, 1993).

Validity of estimate of measure of effectiveness
The analysis was based on a multi-centre RCT, which was appropriate given the study question. The methods used to select the patients are described in the original study (Rost et al. 2002). However, blinding, length of study and loss to follow-up were all reported, suggesting that the internal validity of the study is likely to have been good. The study sample should be representative of all patients meeting the inclusion criteria, and the patient groups were shown to be comparable at analysis. In addition, an extensive statistical analysis was undertaken to account for potential biases and confounding factors.

Validity of estimate of measure of benefit
No measure of benefit was used in the economic analysis. Therefore, the study is characterised as a cost-consequences analysis.

Validity of estimate of costs
Although the perspective adopted in the economic analysis was not explicitly reported, it was not societal since the indirect costs were not included. Only outpatient and intervention costs were included in the analysis. The costs and the quantities were not reported separately, which would not enable the analysis to be easily reworked for other settings. The quantities of resources used were based on patient-reported health care use, but the authors felt that the limitation of the method used might have biased the results against enhanced care, as it was possible that enhanced care patients have reported care manager telephone contacts as outpatient visits. The costs were obtained from official published sources and an extensive sensitivity analysis was undertaken to test the robustness of the results. All of the costs were appropriately adjusted. The price year was reported, which will aid any future reflation exercises.
Other issues
The authors found that their findings were consistent with those of other studies. The issue of the generalisability of the results to other settings was directly addressed. The authors do not appear to have presented their results selectively, although they did not always report the results of the statistical tests performed. The study enrolled depressed patients at the beginning of a new episode treatment and this was reflected in the authors' conclusions.

The authors reported a number of limitations to their study. For example, it was not possible to establish the specific types of health care resources for which use was decreased, owing to an inadequate number of patients using specific services during the time horizon of the study. The authors also admitted that patients included in the study might not have suffered from depression or, alternatively, might have had a disease type (e.g. mixed somatisation-depressive disorder) that could not be captured by the classification system employed in the current study.

Implications of the study
The authors suggested "interventions for targeted depressed patients could be implemented within the primary care practice without increasing overall health care costs, and would allow health plans to adopt these interventions for targeted depressed populations without increasing health care premiums". They called for further research to develop new intervention techniques addressed at depressed patients with physical symptoms. In addition, the discussion highlighted areas where more information is needed.

Source of funding
Supported by the National Institutes of Health, a Health Resources and Services Administration National Research Service Award, and by the John D and Catherine T MacArthur Foundation.

Bibliographic details

PubMedID
15671186

DOI
10.1370/afm.216

Other publications of related interest


Indexing Status
Subject indexing assigned by NLM

MeSH
Adult; Costs and Cost Analysis; Depressive Disorder /economics /therapy; Female; Humans; Male; Mental Disorders; Primary Health Care; Psychophysiologic Disorders /economics /therapy; Time Factors

AccessionNumber
22005000301